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THE GAS RESEARCH BOARD

SINCE its inception in the anxious summer of 1939 the Gas Research Board has been in the habit of holding its annual meeting in June and confining the business to the formal adoption of a report almost a year out of date—covering the 12 months ended on the previous June 30—and the accounts for the preceding calendar year. True, the annual report has seen the light of day at the Autumn Research Meeting of the Institution of Gas Engineers some months before its formal adoption, but the whole arrangement has not been as satisfactory as it might have been. This has now been changed so that the annual report, which will henceforth cover the calendar year, will be presented to a more comprehensive all-day meeting in April of each year.

The new arrangement, under which the annual meeting agenda includes a Presidential Address, the presentation of the annual report and of scientific reports on the work of the Board's staff, and the discussion of scientific subjects of particular interest to members and to the Gas Industry, was inaugurated at a meeting last week of which the notice, at any rate to the Press, was so short that we had no opportunity of including it in our printed "Diary." The meeting reflected the interest and enthusiasm of the Industry in matters of research and at once established itself as one of the Industry's main annual events. The change-over involved the presentation of the Seventh Annual Report (submitted at the Autumn Research Meeting last November), and the Eighth Report, covering the six months from July to December, 1946. The Ninth Annual Report will be presented next April.

Lord Falmouth's Presidential Address at the morning session was commendably brief and to the point, emphasizing the increased importance of research in the light of the general fuel situation. He rightly said that the Industry had many exacting problems before it, and never was the Industry more important than it is to-day; nor has any other industry a greater record of public service. The Gas Research Board should prove to be an invaluable means of enabling the Industry to extend still further its usefulness.

Presiding at an informal luncheon, Dr. E. V. Evans, Chairman of the Council, intimated that at a meeting of the Council the following morning he was retiring from the Chairmanship, feeling that it was in the best interests of the Gas Research Board that there should be a periodical change of Chairman. Mr. D. M. Henshaw proposed, and Mr. E. Crowther seconded, a special toast and vote of thanks to him. Referring to the progress that had been made under Dr. Evans' direction Mr. Crowther said he was handing over an organization with an excellent Director in Dr. J. G. King, with plans for accommodation which it was hoped would prove suitable for the activities of the Board, and with a programme which, while always open to discussion, should form a basis for sound work in the future. Dr. Evans, in a brief response, said it had been one of the outstanding pleasures of his life to work with a council of enthusiasts.

Thus far the Council has had but one Chairman in the person of Dr. Evans, and his retirement cannot but be a matter for sincere regret. Nevertheless he is absolutely right in his view that there should be a change from time to time, for however eminent may be the occupant of the chair it is unfair both to the individual and to the organization over which he presides to expect him to carry on indefinitely. The Council has made a good choice in appointing Dr. H. Hollings as his successor. Dr. Hollings has been Deputy Chairman for several years, and will bring to his new task the results of ripe experience both in his own undertaking and in the wider field of the Board's activities, and the youthful outlook so necessary in the work the Gas Research Board is already doing and that which it is planning to do in the future.

MIDDLESBROUGH

THE problem which confronted the Middlesbrough Gas Department was unique. Hitherto, they have been dependent on surplus coke oven gas for their coal gas supply. This gas comes from two steel works and is to reach a supply of 8 million cu.ft. per day towards the end of the contract which terminates in 1955. Effective stand-by exists in the form of carburetted water gas plant which is available to the extent of 8½ millions per days. But already the maximum daily sale has exceeded 9 millions. The incidence of the load is interesting. In round figures the annual demand has reached 2,373 millions the maximum weekly demand is 61 millions or 1/39 of the annual figure, the maximum day's demand is 9 millions or 1/264, and the maximum hourly demand of 900,000 cu.ft. is 1/10 of the maximum daily demand.

Mr. Stanley Jones, in a Paper to Auxiliary Section of the North of England Gas Managers' Association—see later pages—set out in a very interesting chart the itemized growth in several categories of industrial and commercial demand. Especially noteworthy is the fact that practically every bakery in the district is gas-fired. It is not surprising that at the very low price, 5.22d. per therm, there is a very rapid growth in central heating and in domestic consumption. Mr. Jones instances his own all-gas house where, including a clothes drying cabinet, he uses 930 therms per annum at a weekly cost of no more than 7s. 4d. Middlesbrough is, to all intents and purposes, an all-gas undertaking, but Mr. Jones sees in the growth of domestic space heating a winter peak load which emphasizes the value of coke for seasonal storage.

The crux of the problem, however, is that there is no certainty that sufficient coke oven gas will be forthcoming to meet ultimate expansion, or indeed that the contract will be renewed. One would think that in any modernization of the steel works the surplus coke oven gas might very well be absorbed in the process. Wisely, therefore, it was decided to lay out a complete new works for the production of 15 million cu.ft. per diem. The design is of great interest. It is visualized that there will be five separate benches of continuous vertical retorts each of a daily capacity of 3 million cu.ft. Here we see the modern tendency to erect independent units which can be stood down completely for repairs and resetting at regular intervals. The modern retort bench gives of its best when it can be worked under uniform conditions throughout as near as possible to its economic load but at all events speeded up or slowed down as a self contained unit.

The system adopted—the contract for the first bench is already placed—is the Glover-West and it is to include those developments aimed at fuel economy, elimination of arduous manual labour, and the betterment of conditions of working recently described by Mr. C. A. Poulson. Incorporated in the scheme is the new "balanced" system of heating, the mechanically operated hot-gas producer, the "sector" discharger (with the elimination of rodding), and complete mechanical dust-extraction. An interesting development is the extension of the last-named to the coke screens. The coal and coke handling also follows modern lines, with the gravity bucket conveyor mainly used for elevation and supported in a structure independent of the retort benches, with band conveyors above and below the benches for the horizontal transport of coal and coke respectively. The coke screens are of the vibratory type. The sizes are noteworthy —scalping over 2 in., 2 in. to 1 in., and through 1 in., with dust through ¼ in. removed and rejected. It is estimated that the dedusted coke through 1 in. will be sufficient in quantity for producer fuel.

Dry purification of coke oven gas has been something of a problem. The gas is supplied from the ovens, debenzolized and free from ammonia—that is to say, only the removal of hydrogen sulphide remained to be carried out at the gasworks. The difficulty was that of maintaining alkalinity in the oxide boxes. Soda ash was found at least incompletely successful and resort had to be made to the use of ammonia, presumably purchased from outside sources. At any rate the use of what is described as the washing process in reverse, introducing a liquor containing 0.30% of free ammonia into a Livesey washer, and allowing the gas to pick it up, proved successful in permitting the last traces of hydrogen sulphide to be eliminated in the purifiers.

The new purifiers are designed for the most complete mechanical handling of oxide and lids. The unit now contemplated will be capable of handling 4 million cu.ft. per day in five boxes each 40 ft. square by 6 ft. deep built on a stage floor with revivifying floor above and the whole completely housed in on three sides.

There are several other interesting details in the future plant, among them the complete arrangements of steam and power conservation, in which respect the new plant will be self-supporting, though provision is made for emergency electricity supply from the town network and Lancashire boilers as standby to the waste-heat boilers of the retort houses, an unusual note being struck by provision for a steam accumulator to store steam during off-peak periods.

Gas Staffs and Nationalization

The "Parliamentary Committee" of the British Gas Staff Association has been studying the Electricity Nationalization Bill in detail and is completing its case for the inclusion of clauses in the proposed Gas Nationalization Bill. Audience with the responsible officials of the Ministry of Fuel and Power will be sought to present the Association's case and steps will be taken to ensure that gas staffs are fully represented when the Gas Bill is before the House. So far as we know the Association has not yet expressed any views on the principle of nationalization, but from its journal *Thermfare*, from which the first two sentences in this note are quoted, we gather that, in the light of the Electricity Bill, it hopes to influence the Minister to insert specific compensation, protection, and pension clauses in the Gas Bill, stating clearly the principles to be followed. The now familiar and foreboding phraseology that "the Minister may make regulations for the following purposes" appears frequently in the Electricity Bill. Is from this to follow that the provision of pensions by the creation of new pension schemes and amending or winding-up existing schemes will be applied? However, there is a proviso that such regulations shall be so framed as to secure that no persons with pension rights are placed in a worse position by reason of amendment or winding-up of existing schemes. "Gas staffs," says the Association, "would be well advised to endeavour to secure a national pension scheme for all staffs, incorporating the above proviso."

Gas Industry in Australasia

Compiled and issued by the Statistical Department of the National Gas Association of Australia, the *Statistical Year Book of the Gas Industry in Australia and New Zealand*, 1945, just to hand shows that gas sales in Australia reached an estimated total of 27,860 million cu. ft. in 1945, an increase of 2.8% over 1944 and 46.9% over 1939. Commercial and industrial sales were slightly lower than for 1944, but were still far above pre-war figures, and domestic sales rose considerably. Meters in commission totalled 1,042,000 against 1,031,000 in 1944, and were 15% above the estimated number in use in 1939. Coke sales at 640,000 tons were slightly up on the previous year and were 35% higher than for 1939. Tar sales at 27,190,000 gal. did not reach the 1944 figure but were 38.7% higher than in the last pre-war year. Coal carbonized amounted to 1,707,000 tons, against 1,685,000 tons in 1944 and 1,207,000 tons in 1939; coal stocks, which totalled 100,000 tons at the beginning of the year, were reduced to barely half that quantity by the end of the year. The average number of persons employed by Australian gas undertakings was 9,170 against 8,770 in 1944 and 9,740 in 1939; the wages bill was £3,238,000 compared with £2,719,000 before the war. In New Zealand gas sales were 4,560 million cu. ft., against 4,590 million cu. ft. in 1944, and 3,630 million cu. ft. in 1939; and the number of employees was 1,850 compared with 1,760 in 1944 and 2,000 in 1939. Statistics were made available by all the metropolitan gas undertakings in Australia and by 60 provincial undertakings, the latter representing 88% of the total provincial make. In New Zealand 21 undertakings, representing 87% of the total make, replied to the Association's statistical questionnaire. To make the records as complete as possible the figures are related to the total amount of gas made in the various areas and expressed on a percentage basis. Capital invested in the Gas Industry in Australia has increased by £2,700,000 since 1939 to £25,100,000 in 1945, while in New Zealand the capital employed has decreased from £3,800,000 in 1939 to £3,500,000 in 1945.

Personal

Mr. F. D. MALLEY has been appointed Assistant Secretary of the Birmingham Gas Department. Since his transfer from Nechells Works to the General Manager's Office 10 years ago, Mr. Malley has become a well-known personality throughout the Department.

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A native of Kirkcaldy, Mr. CHARLES WATSON, has been appointed supervisor of the Main Lines and Service Lines Department of Cape Town and District Gas, Light, and Electric Company. Mr. Watson was chosen for the post from 60 applicants. He served his apprenticeship with Kirkcaldy Gas Department and has worked at Farnham and at Lerwick, Shetland.

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Dr. J. G. KING, Director of the Gas Research Board, accompanied by Mrs. King, is leaving Liverpool for America next Saturday, on the maiden voyage of the Mauretania following her return from wartime transport service. They will be away for approximately two months and will visit the main technical bodies of interest to the Gas Industry during their tour.

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Mr. J. M. THORNLEY has been appointed by E. Boydell & Co., Ltd., manufacturers of Muir-Hill dumpers, shovels, and shunting tractors, as their representative for Scotland. Mr. Thornley has been with the Company for 18 years and has been closely associated with the technical and practical investigations which have resulted in the evolution and production of new post-war Muir-Hill products.

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Mr. PERCY E. BROWNE, Managing Director of the Brighton, Hove, and Worthing Gas Company, who has for some time been anxious to be relieved of his heavy responsibilities, retires from office on June 30. As from that date Mr. RAYMOND PRINCE will, as General Manager, be responsible to the Board for the day-to-day control of the undertaking. Mr. Browne retains his seat on the Board as an ordinary Director.

* * *

Dr. C. M. WALTER has retired from his position as Engineer-in-Charge of the Industrial Research Laboratories of the Birmingham Gas Department, and a presentation has been made to him from the staff and workmen of the Department. After taking a Mechanical Engineering course at the University of Birmingham

and subsequently gaining his B.Sc. Engineering, he entered the Gas Department in 1909; and after preliminary work in the design and construction of town gas-fired industrial furnaces and apparatus, he was appointed assistant to Mr. E. W. Smith (now Sir Ernest Smith) on the development of the use of high pressure gas for industrial purposes. In 1916, during the first world war, the Industrial Research Laboratories were formed with Mr. Walter as Engineer-in-Charge, and the work of those laboratories greatly extended the former high pressure laboratory by having subsections under various experts dealing with subjects such as heat treatment on a commercial basis, physical and mechanical testing, chemical and metallurgical investigations. Following upon these new developments, Mr. Walter was awarded the Degree of Doctor of Science (Engineering) of the Birmingham University. Subsequently, the Laboratories were further extended and early in 1939 were transferred to the new laboratory building in Brasshouse Passage.

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To mark the occasion of their retirement, a complimentary dinner was given to Mr. J. W. McLusky (Glasgow) and Mr. J. Jamieson, C.B.E. (Edinburgh), in the Arran Suite, Central Hotel, Glasgow, on April 10. This informal function was arranged by members of the Council of the North British Association of Gas Managers, and the guests included Mr. G. C. Pearson, O.B.E., President of the Institution of Gas Engineers, Dr. W. T. K. Braunholtz, Secretary, Institution of Gas Engineers, and Past Presidents of the North British Association of Gas Managers, and a number of friends. The Chairman was Mr. J. M. Dow, President of the North British Association of Gas Managers. Mr. J. Dickson, Dundee, the senior Past President in the company, proposed the toast, "Our Guests of Honour," which was supported by Mr. D. Fulton (Helensburgh) and Mr. D. D. Melvin (Edinburgh), Junior Vice-President of the North British Association. Mr. McLusky and Mr. Jamieson both replied, and a presentation was made to them of two volumes of books, together with book tokens by Mr. Dickson. A musical interlude, appropriate to the occasion, was rendered by Mr. S. Hall, who sang, "Friend of Mine." Mr. J. P. Whimster, who should have been the accompanist, was called away, but his place was taken by Mr. E. G. Smith (Dunfermline). Mr. H. S. Milne, Senior Vice-President, followed with a toast to the guests, and this was responded to by Mr. Pearson and Dr. Braunholtz. Mr. G. Hannah (New Cumnock) proposed an omnibus vote of thanks to all concerned with the arrangements in connexion with this function.

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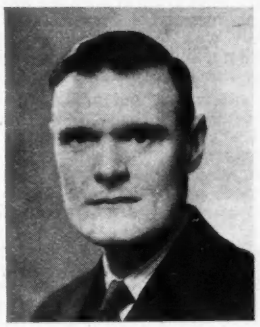
Mr. J. H. Dyde, Chairman of the Southern Association of Gas Engineers and Managers (Eastern District), has been appointed Director of No. 1 Group of the gas undertakings administered by the South-Eastern Gas Corporation. Thus, in addition to his duties as Engineer and General Manager of the Uxbridge, Maidenhead, Wycombe and District Gas Company, and the Slough Gas and Coke Company, Mr. Dyde is now a Director of both these Companies. The remaining undertakings which his Directorship embraces are: Ascot District Gas and Electricity Company, Chertsey Gas Consumers Company, Hornsey Gas Company, Lea Bridge District Gas Company, North Middlesex Gas Company, and Windsor Royal Gaslight Company.



Letters to the Editor

The Question of Encouragement

Dear Sir,—I should like to avail myself of the invitation under the above heading in the "Journal" of April 9 because the question of incentive to work is one of the most vital and difficult which faces the country to-day, and therefore the more it is discussed the better. The problem is a deep and largely psychological one, but I have felt for some time that in industry in particular more might be done about it than is being done.

The present general disinclination for wholehearted effort is variously attributed to high income tax, lack of consumer goods, inadequate rations for heavy work, and post-war fatigue. I think, in addition, that improved social services and the knowledge that there is full employment have tended to induce a belief that there is less responsibility for effort by the individual in order to maintain a reasonable standard of living. No doubt all these factors are contributory, but they are by no means the whole story.

Although I consider the Government has been weak in its public relations in not having explained to the public adequately or in good time the reasons for various circumstances and measures taken, nevertheless there has been sufficient publicity to make plain the parlous economic condition of the country. I fancy, however, that many among the less discerning are apt to dismiss the facts as somewhat exaggerated propaganda put out for the benefit of the Government or private business. Be that as it may, I believe there is a failure to appreciate the true position partly due to lack of imagination and very widespread ignorance of the fundamentals governing the national economy. The vast majority neither read nor understand White Papers and technical articles, and it is here that something might be done.

That increased wages alone do not act as an incentive is evident, but that there is money to spare is shown by the enormously increased expenditure on gambling, now amounting to one-tenth of the national income or one-third of what we spend on food. It is also worth remembering that for the first time (in peace) everyone in this country is getting enough to eat, which one might have thought conducive to extra production.

I would suggest that the following measures are relevant:

1. That management, backed by staff, should strive to maintain the closest personal contact with all employees. The aim is to make each one feel he is a useful and valued contributor to the team effort; and this is obviously easier to achieve in the smaller and more compact concern. Since good leadership is of paramount importance, the selection of executives from foremen upwards needs the greatest care; more, in fact, than it often gets.

2. That suitably qualified persons should explain verbally if practicable, in the simplest terms on what the national economy depends and how the individual can contribute and is affected, emphasis being placed on the fact that wealth, or standard of living, depends not on wages earned but on capacity to produce. If this is not feasible, house magazines, pamphlets, &c., could be used.

3. That employees should be taken into the confidence of the firm as far as possible, and perhaps some simple form of cost statement could be used (only accountants understand balance sheets); and they should be given full encouragement to participate in its conduct by suggestions, &c. It is worth trying to foster the competitive spirit by means of result comparisons but difficult to maintain. In the case of the Gas Industry the facts about electrical competition should be emphasized and the good case that can be made for gas and coke as affecting the national fuel economy, smoke abatement, &c. Not enough use is made of this, and the public remain woefully ignorant on the subject.

4. That maximum interest in the job be stimulated by simple explanations of the technicalities and underlying purpose of the work in question. This was also suggested in your editorial; but I can see less promise in an attempt to re-awaken the old pride of craftsmanship in these days of increased mechanization and mass production.

5. That for the same reason suitable men should wherever possible be taught more than one job and/or their work varied from one time of year to another.

6. That a more equitable scale of wages should be devised as between industries and as between jobs in the same industry. This is overdue, and the cause of much discontent.

We must also, surely, take into account that we are temperamentally more indolent and resistant to a sense of emergency than some other peoples (and the present situation is far less exciting than a Dunkirk or Battle of Britain). But one of our main faults, it seems to me, is that collectively our sense of civic responsibility leaves much to be desired and is a good way behind that, for instance, of Switzerland and the Scandinavian countries; and this is the most important factor of all and should be the chief incentive to work—given fair wages. It has deteriorated sadly since the war; probably education can do most to put it right, but it will take a long time.

The co-operation of the Trade Unions is, of course, essential. Although at the last Congress a call was made for increased output, the chief difficulty of the officials now is to retain control, to prevent unauthorized strikes and restrictive practices, and to instil that sense of satisfaction in a job well done and in working for the common welfare.

Yours faithfully,
G. L. Braidwood.

87, Tyrone Road,
Thorpe Bay, Essex.
April 14, 1947.

DEAR SIR,—Thank you for your editorial of April 9, with its emphasis on the vital question of incentives to work. In his admirable Address to the London Juniors, Mr. Tate stressed the importance of human relationships and pointed out that good relationships do not depend on material things such as sports clubs, pension funds, &c. Since man is more than a material being, it is in the realm of the spirit that we must look for the answer to the question.

Earlier in your editorial you referred to the difference between the Boss and the leader. The day of the Boss is rapidly passing and the day of team-work in industry is coming. The question facing industry is whether management can provide the sort of leadership that will encourage men and women to give their best to their work and hence to the nation. Team-work must be based on mutual respect, honesty and fairness. Men respond with loyalty and hard work when they have confidence in a leader who has enthusiasm and ability as well as integrity of character.

Just as Field Marshal Montgomery won the confidence and loyalty of his men by telling them something of his plans and purpose in the battle so the manager can achieve the same ends by telling his men something of his own plans and purpose for the job, either through his foreman or through the medium of a works council or other similar body. Men want to feel that the manager is approachable—that any just grievance will be dealt with, and that any reasonable suggestion for the improvement of the job will be considered. The manager must be genuinely interested in his men as human beings like himself. Men know when this is the case, and when the manager is only interested in them as means to an end.

Such inspired leadership demands a change in most of us—a change of heart that will come by acquiring a knowledge and personal experience of living Christianity. The secret of incentive is to be found in the New Testament.

Yours faithfully,
G. ALAN THOMPSON.

"Fieldway,"
Burton Stather,
Scunthorpe.
April 14, 1947.

News in Brief

Repairs to the upper portion of two vertical retort benches at the Provan Works of the Glasgow Gas Department are to be carried out at an estimated cost of £13,000.

When the River Afton burst its banks recently at New Cumnock, the gas-works was flooded, and it was only by constant pumping that the water was kept from reaching the retorts. The manufacture of gas was continued almost without interruption.

The Burntisland Shipbuilding Co., Ltd., has secured a contract to build two 2,700 tons deadweight motor colliers of the up-river type for the Gas Light and Coke Company. One of the vessels will be built at the Burntisland yard, and the other by its associated Company, Hall Russell & Co., Ltd., Aberdeen.

The Fifty-second Annual Report of Gibbons (Dudley), Ltd., presented at the annual meeting on April 1, showed a net profit for 1946, after providing for taxation and depreciation, of £43,688, which, added to the £21,781 brought forward from 1945, made a total of £65,469. A dividend of 10% on the Ordinary shares, plus a bonus of 5%, both less tax, was declared, leaving £21,079 to be carried forward.

A Special Meeting of Campbeltown Town Council was held recently to discuss a gas shortage—which has nothing to do with fuel cuts—in the town. As a result of a mystery leakage the town has lost nearly 5,000,000 cu.ft. of gas during the past year. Experts indicate that the leakage is "equivalent to a 2 in. pipe blowing off continuously," but so far they have been unable to find a break. The Council agreed that, apart from the discrepancy between gas made and accounted for, the greatly increased cost of running the gas-works made an increase in the price of gas unavoidable.

New Plant Costing £52,000 is to be installed at the works of the Louth Gas Light Company, increasing the capacity of the present works by more than 50% and giving an output of 650,000 cu.ft. of town gas daily. New carbonizing plant, and coke and coal handling equipment will be installed and will take 18 months to complete. The development is being undertaken by the United Kingdom Gas Corporation on behalf of their subsidiary, the Louth Gas Light Company, and construction will be carried out by local labour under the supervision of the Corporation's engineers.

Mr. R. A. Hentsch, accompanied by Mr. G. A. D. Jackson, both of Barralets, Ltd., gave a talk last month to the distribution employees of the Leamington Priors Gas Company, the Warwick Gas Company, and local builders on gas water heaters—the single point bath heater, storage sink heater, circulator, multi-point heater and wash boiler with wringer. Mr. Hentsch explained in detail the method of fixing and operating a Barralet circulator which had been fitted up to a Ministry of Works' tank in the showrooms as it would be fitted in conjunction with the domestic heat service unit in a post-war council house.

A Conference under the auspices of the Institution of Gas Engineers is to be held at the Public Works, Roads, and Transport Congress and Exhibition at Olympia, London, on July 22, at 11 a.m. The then President of the Institution, Dr. H. Hartley, will preside and the papers to be discussed are: (a) "The Gas Industry and Efficient Fuel Service in the Home," by G. C. Holliday (Gas Light and Coke Company); and (b) "Town Gas in Industry and Commerce," by A. Higgs. Other discussions will be held by various professional institutions on planning, road construction and road safety, sewage, lighting, water, and sanitary services. The Congress and Exhibition has not been held since 1937 and a large attendance is expected.

The Address of the Birmingham Office of Elliott Brothers (London), Ltd., has been changed from Albert Street to 9, Caroline Street, Birmingham, 3. (Telephone 2037.)

Glasgow Gas Department has accepted an offer by Ascot Gas Water Heaters, Ltd., to carry out regular maintenance of water heaters installed in schools, including two visits per year to each appliance and provision of small parts, such as washers, pilot tips, &c., and any intermediate calls necessary, at a cost of 15s. per annum for each appliance in the case of sink heaters and £1 per annum for other types of heaters.

Furmanite Engineering Company (1929), Ltd., of 65, Paul Street, Liverpool, 3, have supplied us with particulars of their method of reducing steam losses by a leak sealing compound which becomes semi-fluid when it is first heated so that it can be forced into any leak under high pressure. It is claimed that the compound, hardened by vulcanization, has the properties of high-grade packing. It is claimed, too, that the "Furmanite" process makes possible a metal-to-metal joint.

Diary

Apl. 24.—B.G.C. Domestic Development Committee. Gas Industry House, 2.30 p.m.

Apr. 24.—Industrial Gas Development Committee, Manchester, 10 a.m.

April 25.—Gas Companies' Protection Association: Committee Meeting, 5, Victoria Street, London. 2.30 p.m.

Apr. 25.—London and Southern District Junior Gas Association: "The Woman's Point of View," Miss Maywen Godby. Gas Industry House, 7 p.m.

Apr. 29.—Midland Junior Gas Association: Annual General Meeting, followed by Address, "New Methods and Materials for House Construction," A. G. Day (Building Research Station).

Apr. 29.—Southern Association of Gas Engineers and Managers (Eastern District): "Mechanized Accountancy and Statistical Work as Applied to a Gas Company," J. D. Thomas (North Middlesex Gas Company). Gas Industry House, 2.30 p.m.

May 1.—Solid Smokeless Fuels Federation: Executive Committee Dorchester Hotel, Park Lane, 11.30 a.m.

May 7.—London and Southern District Junior Gas Association: Visit to the Works of Smiths Meters, Ltd., London.

May 9.—Manchester District Association of Gas Engineers: Annual Meeting and Luncheon, Midland Hotel, Manchester,

May 9.—North of England Gas Managers' Association: Annual General Meeting: Address by Dr. E. V. Evans. Newcastle, 2.15 p.m.

May 16.—London and Southern District Junior Gas Association: Annual General Business Meeting. Gas Industry House, 7 p.m.

May 20.—Southern Association of Gas Engineers and Managers: Annual General Meeting.

May 22-23.—Eastern Association of Gas Engineers and Managers: Spring Meeting, Chelmsford.

May 28.—Manchester and District Junior Gas Association and Yorkshire Junior Gas Association: Joint morning visit to Warrington Gas Department; afternoon visit to the works of the Richmonds Gas Stove Co., Ltd.

North British Association of Gas Managers

Spring Meeting at Paisley

THE Spring Meeting of the North British Association of Gas Managers was held in the George A. Clark Town Hall, Paisley, on April 11, the President, Mr. James M. Dow, Engineer and Manager of the Paisley Corporation Gas Department, extending a welcome to a large company. A civic welcome was extended to the members by Provost the Rev. John Chambers, M.B.E., Paisley. It was intimated that since last meeting the Association had lost by death the following: Messrs. T. S. Lockhart, George Keillor, James Gardner, E. B. Tully, and John Richmond.

It was announced that Mr. J. W. McLusky, recently retired from the Managership of the Glasgow Gas Department, had given a scholarship, to be awarded triennially for the best Paper read by a member of the Association, and gratification was expressed at this generosity on Mr. McLusky's part.

It was also announced that Mr. A. Brown (Alloa) would succeed Mr. R. Sturrock as Secretary of the Association.

Presidential Address

Mr. **Dow** then delivered his Presidential Address.

Mr. **H. S. Milne** (Aberdeen), Senior Vice-President, proposing a vote of thanks to Mr. Dow, said they had listened to an interesting and varied Address. Much ground had been covered and many matters dealt with which were exercising the minds of those in the Gas Industry. There were three things in particular with which their minds were preoccupied: The impending reorganization of the Industry; the coal prospect; and the urgent need for renewal and extension of existing plant. He had not named these things in their order of urgency for that would vary as between one undertaking and another, but they were all problems which must of necessity loom largely in their thoughts and would involve the expenditure of much time and effort which could well be directed to more useful ends. Some degree of reorganization in the Industry was needed and nobody could say otherwise. But whether it could best be obtained by a process of evolution allied to commonsense and goodwill (two commodities now in some quarters in short supply) or by a complete uprooting of their Industry, as they knew it, was a matter on which he did not propose to speculate. As a result of lessons learned recently in a hard school, the contribution which the Gas Industry could make to the solution of the nation's fuel difficulties was beginning to be appreciated. He used the word "beginning" advisedly, because it was difficult to reconcile the suggestion to limit space heating by gas during the summer with the much more realistic decision of the Cabinet to consider providing steel for the needs of the Gas Industry.

He was glad that Mr. Dow had referred to the Gas Engineers' National Guild. In these days of rapid change, when work well done appeared to be of little consequence and consideration was given to those who shouted the loudest, it was necessary to safeguard the common interests of those whose sense of duty outweighed selfish considerations. Mr. Dow's reference to research had been a little unfortunate. It would certainly be most welcome if the work in hand could be streamlined, but it had to be borne in mind that results could not be prefabricated but had to be built up laboriously from the ground, brick by brick, each brick being proved before it was laid in position.

Paisley's Fine Record

Mr. **D. D. Melvin** (Edinburgh), Junior Vice-President, seconding the vote, said the Address did not need the Author's name, but was easily recognizable as the work of Mr. Dow. He had put on record his own viewpoint and had not been afraid to state his opinions in a forthright manner. It might be that if the Address had been open to discussion some contrary opinions would have been expressed on certain matters.

The progress of the Paisley undertaking was typical of their municipal undertakings. Increased outputs of gas from 1939 to 1946 of up to 50%; exceptionally low capital expenditure and outstanding debt; the cost of coal increased by 100% to 120%, with the revenue from residual products lagging behind the coal cost curve; and the cost of gas only increased by a moderate amount when compared with the increased cost of coal, labour and other materials. The moderate increase in the price of gas throughout the Industry was, in large measure, due to the higher outputs. If the quantity of gas to be sold was curtailed, the effect might well be an increase in selling price, unless they could look for a substantial fall in coal cost, a hope which, judging by the market forecast, was not likely to be fulfilled. The question of coal supply, quality, and cost, was one that received no comment from the President. He might have thought that former Presidents had said all that could be put on paper on the subject. He felt, however—and they could not reiterate the fact too often—that the greatest single contribution to the coal economy campaign which could be made by the Industry and which would yield immediate saving of considerable tonnages of coal, would be by the restoration of former qualities and sources of coal supply at the earliest possible date.

Local Influences Threatened

Coupled with this saving would be the restoration of that 10% or 20% of plant capacity which had been lost to them through the use of unsuitable and inferior coals and which had contributed to the very urgent demand for plant extensions in most undertakings throughout the country. Paisley was to be congratulated on having extensions on hand and many of them would envy Paisley. Mr. Dow had given his views on nationalization and the future of the Gas Industry, a matter which vitally affected them and their customers. It was only by such expressions of opinion that the correct policy for nationalization or regionalization could be determined. Few would disagree with Mr. Dow's suggestion of one central directing authority for Scotland, but he personally visualized much smaller working groups or units than the three suggested by the President. The Industry had been built up by close personal control and supervision and its continued progress and success would depend to a large extent on the continuance of local contact and the influence and desires of their consumers. It was essential for the future well-being of the Industry that these local influences should remain and that service to the consumer should continue to improve. He did not think it was too much to insist that the favourable financial position of the great majority of the undertakings in Scotland, reflected in the selling price of gas, should be maintained. The prudent financial policy and foresight of their predecessors in the financing of capital expenditure and the writing off of capital debt was now coming to fruition and it was only right that these benefits should be retained within their own area.

Worse Coal Position Next Winter

At the subsequent luncheon the chair was taken by Councillor George Walker, Convenor of the Paisley Gas Committee.

Lord Balfour, Chairman of the Scottish Committee of the National Coal Board, proposed the toast of "The Gas Industry." It was appropriate, he said, that the coal industry should be represented at that gathering. Gas and coal were not competitors but partners, each having its own province. The impression that the National Coal Board was a part of the Ministry of Fuel and Power was wrong. They were entirely separate. It was unlikely that the Gas Industry would receive the coal supplies it would desire during the present year, but that was not the responsibility of the National Coal Board but of the Ministry of Fuel and Power and the Fuel Allocation Committee.

Unless every conceivable pound of coal was saved during the first months from the start of the miners' five-day week in May, next winter might be even more serious than the one which had passed. The most enthusiastic advocates of the five-day week in mines must recognize that in Scotland it would inevitably lead to a substantial reduction in output immediately after its inception and for some time thereafter. He appealed to gas undertakings to do all they possibly could to keep their plants efficient and stressed that at least four weeks' stock of coal must be built up by the autumn.

Before the war, said Lord Balfour, the figure for absenteeism in mines, both avoidable and unavoidable, was about 5% in Scotland and to-day it was about 11%. At the same time the figure was lower than anywhere else in the British coalfields. The one-day strike had been a rather prevalent feature in Scotland and this might be eliminated. Both in Scotland and elsewhere men were coming into the mining industry more freely and in greater numbers than they had done since pre-war days.

The Institution President

Mr. **G. C. Pearson,** President of the Institution, responding, congratulated Mr. Dow on his election as President of the North British Association, which was a credit to Paisley To all present he extended an invitation to the annual meeting of the Institution and expressed the hope that as many as possible would attend from Scotland.

Their Industry had been unique in the methods it had adopted during the fuel economy campaign and it had established itself as a public benefactor. Its water gas manufacture had resulted in coal saving, but it had also meant a reduction in the amount of coke available for sale.

Mr. **David Fulton** (Helensburgh) proposed the toast of "The Burgh of Paisley" referring to its industrial and other associations.

Provost Rev. **John Chambers,** in reply, said that the Gas Industry had a most important part to play in the life of the community The most important part of municipal work, in his view, was the furtherance of public health and in this connexion the Gas Industry, through the appliances it produced and the service it gave to the community, could play a valuable part.

The **Chairman,** Councillor Walker, proposing the toast of "The

North British Association," referred to the fact that previous Presidents had been Mr. R. Hislop and Mr. A. S. N. Nisbet, both well-known gas engineers in their day. Paisley was proud to think that Mr. Dow had followed in the steps of his illustrious predecessors. Nationalization would bring many changes, but he hoped the local authority would always retain its place in the scheme of things.

Acknowledging the toast, Mr. **Dow** said that whether the Industry was nationalized or not, the Association would always aim at applying its science to the betterment of the service it could render.

Golf Competition

The North British Association Golf Circle held its Spring Competition for the Winson Scott Cup over the Kilmacolm Golf Course on April 10. The following scores were returned:

1. Winson Scott Cup, Mr. F. R. Mitchell, Uddingston,	104-24 = 80.
2. G. E. H. Keillor, Airdrie	91-10 = 81.
3. J. Couper, Glasgow	95-12 = 83.
4. J. Brock, Glasgow	84.
5. D. Fulton, Helensburgh	97-12 = 85.
6. A. Jamieson, Johnstone	98-13 = 85.

The Visitors' Sweepstake was won by Mr. C. Brown, 80. A special prize, donated by Mr. Malcolm Jamieson, for the best aggregate score at the 5th, 7th and 12th holes, was won by J. Brock, 11.

At the presentation of prizes in the Clubhouse in the afternoon, Mr. **R. L. Laing,** Captain, announced the amount of the subscriptions for the presentation to Mr. J. O. Scott, the retired Secretary. Mr. Scott had been presented with a gold watch, suitably inscribed, together with an electric clock and cigarettes.

Mr. Laing also proposed a vote of thanks to Mr. W. P. Rae, Secretary of the Golf Circle, for the excellent arrangements he had made, which had contributed so much towards the success of the outing.

Mr. **S. Hall,** Vice-Captain, returned thanks to Mr. Laing, and said he was sure that all the members were looking forward to the September Meeting at St. Andrews under his Captaincy.

Retort Inspection by Boat

To make an inspection of retorts by rowing-boat must be a unique experience; but this peculiar circumstance marked a visit by Mr. John A. Drake, Managing Director of Drakes, Ltd., Halifax, to the vertical retort installation of the firm's construction at Selby. Selby was one of the worst of the flooded areas of the country, and it occurred to Mr. Drake to see if assistance could be rendered to people in the district; and on arrival, police informed the party that they would be put down in Selby Market Place, where subsequent arrangements must be their own affair.

A rowing-boat was secured, and aboard this the party moved down the gas-works road, and into the gas-works, where the water level reached the bottoms of railway trucks in the siding. Employees had been able to row into the meter house and out again; and Mr. Drake reports the unique experience of rowing under the bottom mouthpieces of the vertical retorts, and making a landing half-way up the stairs to the producer platform.

Beyond the gas-works itself the appalling plight of Selby was presented; and Mr. Drake is left with impressions of an unforgettable tragedy occasioned by one of the most devastating floods in local history.

Hinckley and Nationalization

The effect nationalization of the Hinckley Gas Department would have on the local rates is dealt with in a statement made by Mr. A. B. Britton, Engineer, Manager, and Secretary.

He says that if the terms of the Gas Nationalization Bill are similar to those of the Electricity Nationalization Bill, the Hinckley undertaking will be transferred for a purchase price probably less than a quarter of its value.

The present value of the undertaking can only be determined by a careful valuation, but it probably lies somewhere between £200,000 and £300,000. The net outstanding debt, which is the basis likely to be applied for transfer is approximately £60,000.

The policy of the Council for many years has been to put all the profits back into the undertaking and no contributions have been made since 1915 to relieve the rates. Over 80% of the net profits made since the works were acquired in 1880 has gone to meet capital expenditure out of revenue thereby saving considerable loan charges and helping to keep the price of gas low. The price of gas at Hinckley is among the lowest in the country.

Mr. Britton concludes: "In addition to the loss of the undertaking for a small part of its value the Council will proably lose the benefit of certain income tax reliefs which have averaged £4,500 a year during the past four years and which if lost, in effect, have to be made good from the rates."

Purchase Tax on Gas Appliances

The statement of revenue and expenditure as laid before the House of Commons by Mr. H. Dalton, Chancellor of the Exchequer, in opening his Budget on April 15, provided for the imposition of Purchase Tax at the rate of 66⅔% on "domestic appliances and apparatus of a kind suitable for operation from gas or electric mains," with the exception of lighting and certain other equipment.

Examples of the mains-operated gas and electrical appliances on which tax is imposed or increased are set out in a notice by the Commissioners of Customs and Excise as follows:

Cookers, boiling rings, grillers, and hotplates; cooking utensils and kettles incorporating heating elements; urns of a capacity not exceeding 5 galls.; food mixers of a capacity up to 12 quarts, mincers and grinders; fruit juice extractors; ice-cream machines of a capacity up to 12 quarts; refrigerators having a storage capacity not exceeding 12 cu.ft. (other than those exclusively designed for a non-domestic purpose); space heaters, except tubular heaters of flame-proof and traction types; towel rails; fireguards and other furniture incorporating heating elements; gas central heating plant rated at less than 150,000 B.Th.U. per hour; storage heaters not exceeding 30 galls. capacity; electric immersion heaters with loading not exceeding 3 killowatts; geysers, single and multi-point; wash boilers; washing machines; irons and ironing machines; trousers creasers; dish washers; drying cabinets and airers; pokers (fire-lighting); curling tong heaters; air conditioning apparatus.

These alterations apply to goods delivered on sale or appropriated to retail trade or similar purposes by a registered manufacturer or wholesaler on or after April 16 and to imported goods entered with the Customs or delivered from bonded warehouse for home consumption on or after that date. In the case of sales by registered to unregistered persons, the alterations apply to goods actually despatched on or after April 16, irrespective of the date when the contract of sale was made or the goods were invoiced. Section 23 of the Finance Act, 1946, enables contract prices to be adjusted in certain circumstances in respect of goods affected by the alterations.

Goods delivered before April 16 by a registered person under a taxable sale (*e.g.*, to a retailer) and goods appropriated by a registered person before that date to retail trade or other taxable purposes (*e.g.*, office use or hire purchase) are not affected by the tax alterations. Retailers are free to dispose of their existing stocks at a price to cover the tax, if any, which the goods have borne.

Prior to October, 1945, most of the gas appliances which have now become subject to the 66⅔% tax were subject to a Purchase Tax of 33⅓%, but in his Budget of that month Mr. Dalton removed the tax completely from gas and electric fires, radiators and convectors, gas and electric cooking stoves, boiling rings, grillers, and hotplates, geysers, immersion heaters, and similar water heaters, wash boilers and coppers, and refrigerators. The 33⅓% tax was continued on drying cabinets, gas cooker lighters, gas pokers, irons and ironing machines, and dish washers, all of which are now taxed at the higher rate of 66⅔%.

The Chancellor of the Exchequer has been asked to meet representatives of the British Gas Council to discuss the imposition of purchase tax on gas appliances, with particular reference to the case which the Council desires to submit for the exemption of gas cookers from the tax.

S.B.G.I. Silver Medal Awards

The Council of the Society of British Gas Industries have again this year awarded silver medals to each of the Junior Gas Associations for the best paper adjudged to have been presented during the year by their members at a general meeting. Nineteen papers were submitted by seven Junior Gas Associations for adjudication. They were all of a high standard. The list of awards is as follows:

London and Southern District Junior Gas Association.—L. J. Clark (Gas Light and Coke Company) for Paper on "Power Plant and Machinery for Exhausting and Boosting Gas."

Manchester and District Junior Gas Association.—S. Ashworth (Leyland) for Paper on "Some Considerations of Power Utilization on a Medium Sized Gas Works."

Midland Junior Gas Association.—G. J. Rimmer (Hinckley) for Paper on "Gasworks Liquors and their Disposal with special reference to Electro-Tar Precipitation."

Scottish Junior Gas Association (Eastern District).—C. A. Hardie (Edinburgh) for Paper on "Clerical Work in a Mains Department."

Scottish Junior Gas Association (Western District).—C. A. Poulson (West's Gas Improvement Co., Ltd.), for Paper on "Modern Developments in Coal Carbonization."

Western Junior Gas Association.—F. W. Samson (Exeter) for Paper on "The Development of Specifications for Public Lighting."

Yorkshire Junior Gas Association.—Norman B. Biggs (Halifax) for Paper on "The Operation and Control of Oxide Purification."

Midland Counties Coke Association

THE ninth Annual General Meeting of the Midland Counties Coke Association was held at Birmingham, on Mar. 27. The Chairman, Mr. F. C. Briggs (Dudley, Brierley Hill, & District Gas Company) was in the Chair, and the meeting was well attended.

Mr. **Briggs** in his annual review said there had been one general increase in the price of coke during the year, when 10d. per ton was added in July on account of increased railway rates. This made the total general increase in the Midland Area since the outbreak of war 26s. 11d. per ton.

He explained efforts that had been made to maintain the production of washed gas coke, a highly specialized fuel extensively used by the chain making industry in the Black Country and for forge purposes in some other parts. At the urgent request of the Admiralty, for whom the chain makers were engaged on very important work, a full investigation was made into the cause of the shortage and it was found that it was in some measure financial, as this material had only advanced in price in accordance with the general increases on ordinary unwashed coke, though the cost of washing had increased very greatly during the war. An application was finally made to the Ministry of Fuel and Power and sanctioned by them, for double screened and washed coke to be sold throughout the Association area at 10s. per ton above the price of ordinary No. 1 size coke; and double screened and washed coke, which had been specially cut for this purpose, at 17s. 6d. per ton above the price of No. 1 size.

Retail Delivery Prices

Mr. Briggs mentioned the increase at the beginning of March in the price of retail deliveries of coke. It had been decided by the Executive Committee that morning that as the increase did not apply to gas-works prices or to deliveries in large quantities, the price schedules should not be altered. One aspect of this increase, which had been settled without consultation with the coke organizations, was the fact that it had cut right through the arrangement which the Ministry themselves had made with coke distributors in the association's area in 1943—an arrangement in which producers were observers but with which they were not in agreement. This arrangement had given merchants a standard margin on deliveries of coke under the retail coal schedules, no matter where these deliveries were made. The recent increase, varying as it did between one county and another (there were four different figures for the Midland Area) completely destroyed this uniformity.

These margins had been based on the merchants' highest buying price at the local gas-works or station, and in an endeavour at that time to prevent consumers' prices from rising to an unreasonable level gas undertakings had voluntarily offered to contribute 10d. per ton towards these margins for retail sales, and many merchants were continuing to claim this rebate from their supplying producers. Now that the margins had automatically been advanced the Executive Committee had considered whether this voluntary rebate should be discontinued, but they had decided that at this juncture it might raise difficulties if the concession were discontinued and it would therefore remain in force.

There had been further discussions in regard to the possibility of standardizing merchants' margins on all coke business. A provisional agreement on this matter had been reached at the general meeting in 1945, but certain events had made it impossible to implement the agreement throughout the area and it had therefore been in abeyance. The position was now complicated by the fact that a scheme of standard margins was being put into operation in another district. The Distributors' Branch were seeking the views of their District Committees on this new development.

Complex Domestic Crisis

"This country," Mr. Briggs continued, "is passing through a complex domestic crisis more severe than anything caused by recent active hostilities; the effects will be felt for very many months to come. One phase of this crisis—snowdrifts and floods, traffic dislocation and agricultural loss and damage—can be attributed to no human failure nor could it have been foreseen or forestalled by human wisdom. But the other phase, the dislocation of industry, the fall in industrial output, and the misery we have all suffered in the severe winter, has a more sinister basis. Analyse our difficulties as we may, we finally arrive at the root cause—the shortage of coal, intensified by the deterioration of quality of coal supplied. The severe weather, which might have been anticipated by the law of averages, has only accelerated and intensified the difficulty.

"This crisis has been anticipated by those of us in the Gas Industry, for a long time, and we have not ceased to draw the attention of those in authority to the danger—in fact the position was judged to be so serious that at the end of last year the British Gas Council informed the Ministry of Fuel and Power that widespread breakdown in the supply of gas appeared inevitable during February and March.

"The heavy increases in the demands for gas and electricity in recent months have been very largely due to the shortage of solid fuel; we all know how short deliveries of household coal have actually been. In an increasing shortage of solid fuel, the demands for increased output from factories by the Supply Ministries was quite inconsistent, and the system of allocations of coal adopted was inevitably doomed to the failure that came to it.

"The control of coke was assumed by the Ministry of Fuel and Power in 1944. The machinery of the District Coke Associations was used to implement this control, but the method was imposed by the Ministry—a method entirely opposed to the considered opinion of the Committee of this Association and doomed, in my own view, to the ultimate chaos that has overtaken it. The Association put forward its own scheme, based on its own knowledge and experience, but this was not accepted. The scheme would not have produced coke that was not there, but it would have been flexible in conditions that inevitably change rapidly, and realistic in that consumers would not have been misled by expectations of delivery that could not be fulfilled. It would have involved a system of priorities, which seem to be anathema to the directing authorities, but which in fact are quite inevitable in times of shortage.

"We are now faced with the necessity of programming for the immediate future, still on the Ministry's settled system, a system which allots coke by four quite unrelated authorities which have no contact and no co-operation, with a fifth avenue of supply quite unregulated and uncontrolled."

Bleak Outlook

The Chairman said that from the forward estimates which Mr. Goodland, the District Coke Representative, was receiving it appeared that there would be a more severe shortage in the coming year than there had been in the last year. However natural it might be for producers to endeavour to keep their own direct customers supplied they would be compelled to accept a more realistic view and to spread available supplies as evenly as possible.

In the last twelve months, while coke had been unavailable in the Midlands, there had been surplus coke available from time to time in other Districts. Attempts to import this had, in the main, failed owing to the heavy cost of rail transport, which could not be met if the coke were to be resold at its destination at controlled prices. This implied some kind of scheme whereby all consumers throughout the area paid a small levy which would be used to meet the extra costs of moving coke from surplus to shortage areas. The pool might also be used to defray excess costs of purchasing coke for water gas manufacture and works use.

Coming to development and technical work, the Chairman said the Association could congratulate itself upon its good fortune in having a very energetic Technical Committee, under the able guidance of Mr. C. M. D. Belton, and with the vast facilities of the Birmingham Gas Department for testing, research, &c., at its back. They were indebted for the generous way in which these facilities were put at the disposal of the Association. The Technical Committee had started by providing themselves with a groundwork upon which to base their activities, in the form of a very comprehensive survey of coke production and marketing within the area, and he understood that this survey was to be duplicated in other districts.

"I would like to add my own plea," he said, "in regard to the growing importance of sizing coke. The publication of the Ministry's Domestic Fuel Policy Report makes it clear that the Government are fully in support of the use of smokeless fuels in new houses and the substitution of smokeless fuels for bituminous coal in existing houses. This presents enormous potentialities for coke, providing it is suitable for the domestic market. One of the principal factors is, of course, adequate sizing, and the Technical Committee strongly recommend that all members who do not already size their coke to the standard sizes should take immediate steps to do so, in spite of the present-day difficulties in regard to plant."

The National Bodies

Mr. Briggs then touched upon the progress of the National Federation of Gas Coke Associations and the Solid Smokeless Fuels Federation. In regard to the latter he said that while the District Hard Coke Organizations (with whom the Association had an agreement in regard to prices and other matters) had been wound up on Dec. 31 on the advent of the National Coal Board, the British Coking Industry Association—the National Body—still remained in existence and was a constituent member of the Solid Smokeless Fuels Federation. He had been assured that there

would continue to be co-operation between the hard coke industry and the Association.

Mr. Briggs referred to the change of Secretaryship in the Coke Distributors' Branch, Mr. D. N. Maddocks becoming Secretary in November. There had naturally been some feeling of discouragement amongst members of the Branch owing to the breakdown of the proposals in regard to the standardization of margins, but he had every hope that this feeling would now be dispelled and he was looking forward to increased activity in the Branch.

It had been a very difficult year, marked by anxiety over supplies and overshadowed by the feeling of insecurity as to future developments. What would happen about nationalization he did not know, but whatever happened he was sure that the work they were doing was work that had to go on and be intensified. Even if it became, as it might well be, a part of the nationalized Gas Industry, they had done work of which they had no cause to be ashamed. However uncertain the future they must plough forward from day to day and carry on their good work."

Mr. **A. W. Lee** (Birmingham), in seconding the adoption of the report and accounts, said the Association was indebted to Mr. Briggs for the great interest he took in the Association and the work he did in connexion with it.

Mr. **E. A. Goodland** (Assistant General Manager, Birmingham Gas Department, and District Coke Representative) spoke on the programming of gas coke supplies. There was a shortage of coke; but the principle of programming was to see that the shortage was spread evenly over all consumers. From returns he had received from members of the Association it was apparent that they were either unable or were not prepared to maintain this principle. A large number of undertakings wished to earmark more and more coke for their direct works customers, leaving the quantity of coke available for other programming purposes at such a low figure that programming was being rendered impossible. He asked for members' collaboration in bringing about a change in this respect, and in not overstepping their own maximum allocations. He was hoping for further progress in the matter of establishing priorities, and also of importing coke into the area. Figures for this year's budget showed a national shortage of about 10% of coke, and a shortage of more than 20% in the Midland region. This made a strong case for a Pooling Scheme. The prospects for the coming year were worse than last year; but the use of hard coke for gas-works plant would be tried out to a greater extent so as to transfer equivalent tonnages of gas coke to the gas coke market. There were hard battles ahead, but they must be faced, and if the programming scheme were to be carried out there must be complete co-operation from producers.

In the absence of Mr. Belton, Mr. **E. Pickering** (Birmingham Gas Department) spoke on the work of the Technical Committee and the testing of appliances which was taking place.

Mr. **C. R. Hackett** (Redditch) proposed a vote of thanks to Miss Price and Mr. Maddocks and their respective staffs for their service during the past year, to which the Chairman added his own tribute. This was seconded by Mr. A. B. Britton (Hinckley) and carried unanimously.

In replying, Miss **Price** referred to producers' difficulties in the past year and a tendency towards a feeling that with nationalization looming ahead there was no longer the incentive to get on with new schemes such as those in connexion with margins and a pooling system. "If and when the Industry were nationalized there would be changes in it, but its fundamental functions would not be altered. Coke would continue to be made; it would continue to be sold; and it would continue to be burnt. Therefore plans for improved production, better sales methods, and more efficient combustion were no less important because the superficial structure of the Industry might be different by the time they came to fruition. She took the opportunity of thanking members for their many good wishes and the wedding present which they had given her on her marriage the year before.

Steel Houses in Wales

What is believed to be the first British Iron and Steel Federation house to be completed in Wales was recently furnished and opened for public inspection. This house, one of 49 of the 98 B.I.S.F. houses under construction, is serviced by gas with the exception of lighting.

Built to the order of the Milford Haven Urban District Council, the B.I.S.F. houses are permanent dwellings, with the method of building based upon the use of a structural framework of steel, with steel sheeting and plastered expanded metal externally.

Prospective tenants are allocated to each house with due regard to their choice of fuel for heating, cooking and washing. The kitchens of the all-gas houses are fitted with standard units, which include a Radiation Regulo free-standing cooker supplied by the Council. Provision is also made for a gas sink water heater for use in the summer.

Association of Tar Distillers

The annual report of the Association of Tar Distillers for 1946 reveals that the Association continued its active co-operation in the work of the British Tar Confederation during the year. The Memorandum and Articles of Association of the proposed Coal Tar Research Association were approved by the Department of Scientific and Industrial Research.

National needs for coal tar fuel 200 (creosote/pitch mixture) were supplied through the Petrolum Board, and small amounts of C.T.F. 50 and C.T.F. 100 were also supplied during the year. Considerably increased home demands for road tar were met and exports to Continental countries were made under arrangements of the Export Sub-Committee of the National Road Tar Committee.

Large and increasing demands for pitch for home briquetting requirements were met; large amounts of pitch were also used for fuel purposes, including burning by members on their own works, and considerable exports were arranged and shipped. Experimental work was undertaken on pitch mastic for flooring under the auspices of the Coal Tar Bituminous Products Sub-committee.

Creosote Exports

A Creosote Export Groups Committee was formed to co-ordinate export activities on creosote; although the greater part of the creosote production was absorbed by various home demands, a considerable tonnage of creosote was exported, mainly to the U.S.A.

In view of the shortage of phenol to meet essential requirements, synthetic phenol was temporarily exempted from K.I.D. early in the year. As regards benzole and toluole the industry continued to co-operate with the Ministry of Fuel and Power through the Benzole, &c., Advisory Committee. Arrangements were made with the Ministry for the disposal of Government-owned surplus toluene.

The demand for naphthalene steadily increased during the year. Discussions on the supply/demand position were instituted between the Naphthalene Sub-committee and two of the main consuming bodies—*i.e.*, the chemical consumers, represented by the A.B.C.M. Naphthalene Consumers Committee, and the firelighter manufacturing industry, represented by the National Association of Firelighter Manufacturers.

The industry has kept in touch with the Government through the Coal Tar Control, on the question of carbon black manufacture, though the interest in the matter is limited to a very few members. In July representatives of the Association attended a meeting of the Interdepartmental Committee on carbon black set up by the Government, but there have been no further developments.

German Chemical Industry

The Association has continued to co-operate with the Association of British Chemical Manufacturers and the various Ministries in connexion with investigation of German industry, interrogation of German scientists, &c., and members have had opportunities of nominating technicians to teams visiting Germany, of borrowing or purchasing copies of reports on German industry.

The Association has kept closely in touch with developments on the Hydrocarbon Oil Regulations; when the Chancellor announced his intention of removing the duty of 1d. per gall. from imported fuel oil and granting a subsidy of 1d. per gall. on home produced fuel oil from Oct. 1, 1946, until the next Budget, the Association co-operated with the Ministry of Fuel and Power in devising arrangements to collect the subsidy.

The Association co-operated with the Association of British Chemical Manufacturers in its examination of overseas tariffs in preparation for the proposed international negotiations on the reduction of trade barriers. The Association maintained its close relationship with the British Standards Institution on the work of the Institution's committees dealing with tar and allied products.

At the recent annual general meeting the following Officers were elected for the ensuing year: President, W. A. Walmsley (Thomas Ness, Ltd.); Vice-President, C. Lord (Lancashire Tar Distillers, Ltd.); Hon. Treasurer, Capt. C. W. Harris (Burt, Boulton & Haywood, Ltd.); Hon. Auditor, E. Hardman (E. Hardman, Son & Co., Ltd.); Executive Committee: The President, Vice-President, Immediate Past-President (Mr. S. Billbrough), and Hon. Treasurer, together with L. Hilton, T. A. Wilson (Scotland), J. Colligon, W. A. Walmsley (N.E. Coast), C. Lord, A. E. Brown (N.W. Coast), A. Bradbury, G. F. Peirson (N. Midlands), Stanley Robinson, W. H. Phillips (S. Midlands), S. Roberts, Major A. G. Saunders (London & S.E. Counties), H. H. Bates, Dr. T. H. Butler (S.W. Counties), Capt. C. W. Harriss, C. F. Dutton (Wales), E. Hardman (smaller distillers' representative), Col. W. A. Bristow (low temperature tar distillers' representative).

Improvements and Extensions to mains and plant are announced by the Barton-on-Humber Gas Company, which is this year celebrating its centenary. Their schemes include new town mains, new offices, showroms, and laboratory. A new modern retort house with elevators is being constructed at a cost of £10,000 to be in operation in a few weeks. Last year's gas consumption was the highest on record.

The Post War Period at Middlesbrough*

By STANLEY JONES, M.I.Chem.E., M.Inst.Gas E.

Deputy Gas Engineer and Manager, Middlesbrough Corporation Gas Department

SINCE the cessation of hostilities the Gas Industry has had to adapt itself to many changes. Fuel shortages, large increases in demand for gas, arrears in plant maintenance and renewals, and an unprecedented shortage of materials, are all factors which have thrown a larger load of responsibility upon the shoulders of gas-works technical staff then ever before.

In the period immediately preceding the second world war, the most important consideration as far as the majority of chief executives were concerned was sales. Competent and experienced salesmen were at a premium, and the sale of gas for industrial purposes was beginning to develop. This urge to develop sales is now temporarily in abeyance owing to the shortage of manufacturing plant and lack of gas appliances. It is necessary, however, more than ever before, that a future sales policy should be prepared and developed now and every effort made for an intensive selling and development campaign as soon as conditions are favourable.

In the meanwhile the greatest effort must be concentrated on the repair and overhaul of existing plant, the construction of new plant, and the planning of works to meet the increased loads of the future. Following on the destruction and stagnation occasioned by a world war, coupled with increasing output, the Gas Industry is now in greater need of works development than ever before in its history. At the same time, however, chief executives are more taken up with administrative matters so that the details of development of works and plant and organization of the various departments fall more heavily upon the junior staff.

Present Position in Middlesbrough

At the end of hostilities in 1945 the position in Middlesbrough was as follows:

Purifying plant: Total capacity, 6,400,000 cu.ft. per day.

Carbonizing plant: Inclined retort settings, capacity 1,250,000 cu.ft. per day.

Carburetted water gas plant: Total capacity, 5,500,000 cu.ft. per day.

Steam raising plant: Four Lancashire boilers, total maximum steaming capacity 16,000 lb. per hour.

Washing and scrubbing plant: Total capacity, 6,000,000 cu.ft. per day.

Gasholder storage: Total capacity, 8,400,000 cu.ft. per day.

Output of gas for the year ended Mar. 31, 1945, was 2,028,066,000 cu.ft., calorific value 500 B.Th.U. The anticipated output for the year ending Mar. 31, 1947, is 2,373,000,000 cu.ft. The maximum figures up to date are as follows:

	Cu.ft.
Maximum yearly output, 1946-47	2,373,277,000
Maximum weekly output, 1946-47	61,235,000
Maximum daily output, 1946-47	9,091,000
Maximum hourly output, 1946-47	909,000

Our coke oven contract with Dorman, Long & Co., Ltd., terminates in 1955. This was made in 1939, and covers a supply up to a maximum of 8 million cu.ft. per day of gas from the coke oven plants at the Acklam Iron and Steel Works, and Cleveland Iron and Steel Works, the larger proportion of which gas comes from the Cleveland Works. The gas is delivered to us free from benzole and ammonia, but H_2S purification has to be carried out at our works.

We are almost entirely dependent on the coke ovens for our coal gas supply. It was not anticipated that the maximum contract figure of 8 million cu.ft. per day would be reached until the end of the contract period. Actually we have exceeded the figure eight years before the termination of the contract, and present indications are that we shall continue increasing our output very rapidly. There is no certainty that our coke oven contract will be renewed, and in any case our gas supplies depend on the future of the iron and steel industries.

These considerations have determined our policy. Comprehensive schemes have been prepared which involve what is almost the construction of a new works, and these schemes are now in process of being implemented.

The principal items in these schemes are as follows:

1. Acquisition of the necessary land for gasmaking purposes. We are fortunate here in having access to ample land immediately surrounding the existing works, standing vacant from former slum clearance schemes.

2. Design and layout of new gasmaking plant, making use of two existing retort house buildings for a total capacity of 15 million cu.ft. of coal gas per day.

3. Total carburetted water gas plant for 8½ million cu.ft. per day.

4. Purifying plant for 15 million cu.ft. per day.

5. Extension of the existing exhauster or engine house to accommodate additional exhausting plant.

6. Ancillary plant, including tar extractors, washing plant, benzole plants, tar plants, and ammonia plants.

It is possible with the land which has been so far acquired to lay down gasmaking plant for at least 20 million cu.ft. per day, added to which carburetted water gas would bring the total up to 28½ million cu.ft. per day, and this would leave sufficient land to accommodate all the necessary purifying and ancillary plant.

Having presented a background to the conditions prevailing in Middlesbrough, I propose now to detail various items of interest and finally to discuss the layout of the new works and the choice of new gasmaking plant.

Purification

The present capacity of our purifying plant is nominally 6.4 million cu.ft. per day. Each set of 3.2 millions capacity comprises four boxes 40 ft. by 40 ft. by 6 ft. deep, charged with approximately 140 tons of new oxide and one catch box 40 ft. by 30 ft. by 6 ft. Over the last few months we have been passing an average quantity of 8 million cu.ft. per day through these purifiers, and at times up to no less than 10 million cu.ft. per day. During the very cold weather in February we averaged about 9 million per day for a period of about three weeks. We have anticipated this overloading, and in addition to frequent emptying and filling the boxes with as much oxide as they would take and arranging for all the oxide over the peak winter months to be "first time in," we have taken the following two steps:

Step No. 1

On one set of purifiers which are in line with side valves and a return main feeding the gas from the fourth box back to the first box, we altered the return main to feed back from the fifth box, which was a catch box, extended the inlet and outlet mains, and so are enabled to work all five boxes in rotation. This has proved advantageous, and we have specified this method of rotating in our new installation of purifiers, thus doing away with the use of a permanent catch box. We encountered one snag, however, which was that in the absence of a permanent catch box the temperature of the gas on heavy load periods was much higher than normal at the outlet purifiers. This meant a higher meter temperature, since the gas went directly to the meter from the purifiers. At Middlesbrough the gas flows from the works to the Snowden Road holder station, a distance of approximately three quarters of a mile, before it enters the holder, and consequently heavy condensation was found in the syphons on this main. We also found excessive condensation in the town syphons and in consumers' services on one part of our district which was fed on peak periods by gas passing direct to the inlet station governors without going into the holders. This trouble was quickly remedied by reducing the temperature of the gas at the outlet purifiers to a maximum of 80° F.

Step No. 2

Until some 12 months ago it had always been the practice of Middlesbrough to keep the oxide in the purifiers alkaline by spreading a layer of soda ash on top of the oxide when each box was filled. The coke oven gas was invariably entirely free from ammonia. This

* From a Paper to the North of England Gas Managers' Association (Auxiliary Section).

was satisfactory up to a point, but on heavy loads it was found that the last traces of H_2S were very difficult to eliminate. It was decided to introduce ammonia into the gas so as to reproduce the purifying conditions normally found in a gas-works. This was done by using the ammonia washing plant in reverse—*i.e.*, introducing a solution of ammonia into the washers and allowing the gas to extract ammonia from the liquor. This was first of all tried on the existing rotary washer. The washer was filled with a liquor containing 0.30% free ammonia, which solution was in equilibrium with a gas containing about 5 grains of NH_3 per 100 cu.ft. at 60° F. Fresh liquor was added daily. There was no effluent from the washer and it was found that the gas carried more liquor away in suspension than was being added daily. It was also found that equilibrium was established in one phase in the washer, so that gradually the use of the washer developed to the use of one chamber of the washer only, that being the one adjacent to the liquor inlet. It was evident that there would be less carry-over of liquid in a Livesey washer, and since equilibrium was so easily established the use of the Livesey washer would be most satisfactory. This was tried with satisfactory results, and the Livesey washer is now functioning as a means of introducing ammonia into the gas, with daily additions of concentrated ammonia liquor direct into the washer.

The introduction of ammonia from cylinders was considered, but this was more expensive than the method adopted.

The position now is that one set of purifiers has been working with ammonia for maintaining alkalinity while the other set has been kept on soda ash. We are obtaining better results following the use of ammonia, and the difficulty of eliminating the last traces of H_2S has disappeared. We are now proceeding with fitting up our second set of purifiers with means of maintaining alkalinity by the same method.

Laboratory

The existing laboratory in 1945 was small and inadequate for the work which was required. New works plant was developing, investigation of domestic appliances was required, and our industrial section was developing rapidly. New laboratory premises were urgently required. An existing building on the works was modified and altered to suit our requirements and we have now completed a laboratory which will be adequate for our purposes for many years to come.

Meter Repairing

In 1945 our meter repairing and meter testing staff had fallen to a total of four men. We have now built the staff up to 12 men, and intend eventually to engage a total of 20 men in this shop so as to carry out practically all our own meter repairs as was practiced before the war. At present we repair approximately half our meters, while half are sent away to the manufacturers. Our average cost of meter repairs at gas-works amounts to £1 4s. 9d. per meter, whereas the average cost of repairs at makers' works works out at £2 8s. 10d. per ordinary meter and £2 17s. 6d. per slot meter.

The new staff for the meter repair shop has mainly been recruited from our own workmen. Suitable men are trained, and in these days when so many men received a semi-mechanical training in the Forces, it is found that they pick up the work of meter repairing very quickly.

Industrial and Commercial Sales of Gas

The industrial and commercial load is developing rapidly in Middlesbrough. The biggest hindrance is lack of materials and delays in delivery of equipment. The load promises in time to rival the domestic load. At present the industrial and commercial uses of gas comprise the following:

Central heating, bakers' ovens, space heating, steam heating, kitchen and canteen work, core and mould drying, ladle drying, metal melting, ferrous and non-ferrous forging and moulding.

Practically every bakery in Middlesbrough is now gas fired and includes the following types of oven: Side, peel, steam tube, and conveyor.

Distribution

In 1940 Middlesbrough Corporation acquired the small gas undertaking at Stokesley. Stokesley is situated a distance of 11 miles from the Middlesbrough works, and is fed by 12 in. and 8 in. diameter mains. With the rapid increase of gas consumption at Stokesley the pressure in that area has become insufficient during a peak period lasting for a brief space of one hour on Sundays. Recently we have completed a branch from the Stokesley main to feed the village of Great Ayton, and further extensions are envisaged to include other villages in our extended area of supply—namely, Newton, Easby, Battersby, Ingleby Greenhow, Broughton, Kirby, Great Busby, Carlton, Hutton Rudby, Seamer, and Newby. It was evident that steps would have to be taken immediately to increase the pressure at Stokesley over peak periods, and this is to be done by the installation of a high pressure holder on the site of the former gas-works.

Maximum use has been made of the land available on the site and tenders have been invited for a high pressure holder 60 ft. long by 18 ft. diameter, working up to a pressure of 100 lb. per sq. in. The holder is to be of riveted construction and at full pressure will have a capacity of 57,337 cu.ft. of free gas. Provision has also been made for another holder of similar size on the same site.

The compressor will be electrically operated, and the auxiliary plant will include all the standard equipment required to make the plant entirely automatic. The plant will have two "on" periods and two "dead" periods, during the 24 hours, and the compressor will start and stop in accordance with the capacity of the district mains to supply gas while the holder pressure is below the fixed maximum. Duplicate governors will be provided for reducing the holder pressure to that required for the district. We chose an electrically-driven compressor for ease of control, lower maintenance costs, and because of the lack of skilled supervision on the spot. The only electric current available in the area was a 480-volt, single phase, A.C. supply. It was most difficult to obtain a variable speed motor to run off a supply such as this, so we specified a rectifying unit, and the plant will operate on a D.C. 220-volt supply.

The horsepower has been based on an isothermal efficiency of the compressor between 53% and 58% and is the horsepower required at the compressor shaft. The consumption of electric current has been based on a motor efficiency of 83%.

Cost of current has been based on a mean pressure of 70% of the maximum pressure.

There is a considerable difference of opinion regarding the methods adopted for the testing of high pressure holders. Some undertakings favour hydraulic testing, others air testing. If hydraulic testing is specified the holder has to be designed to carry the volume of water necessary for the test. This means that the internal framing has to be substantially increased to avoid deformation of the vessel when filled with water and the foundations have to be designed to carry an increase in weight of about five times as much. This increases the cost of the holder and foundations by a substantial amount.

On the other hand, if air testing is specified, internal bracing is reduced and the foundations are much smaller. The objection is that air, being a very elastic fluid, is liable to cause an explosion of considerable violence if a rupture occurred, whereas water, not being elastic, loses its pressure with very little expansion and no serious damage can occur.

When air testing is specified, the holders should be designed with a factor of safety of 4 to 5. If a leak occurs on a rivited seam, it will be due to faulty riveting; a faulty rivet can be replaced, and with proper supervision it is unlikely that a series of faulty rivets will be found. The likelihood of anything serious happening is very remote, and the holder is tested under conditions similar to the actual working conditions.

Less experience appears to have been obtained with welded high pressure holders, and a fault in a welded seam might be more serious and less local than a faulty rivet.

Insurance companies raise no objection to air testing, and in our case we have specified a riveted holder to be subjected to an air test of 150 lb. per sq. in. for a working pressure of 100 lb. per sq. in.; the whole to be designed with a factor of safety of five.

There does not appear to be a British "code of practice" for high pressure holders, but I understand that one is now under consideration by the insurance companies.

Further developments on the distribution side are proposed for the summer months and include the laying of three miles of 24-in. cast iron main from our Cannon Street holder station to feed the east side of Middlesbrough, where extensive housing developments are in progress and where a trading estate is to be established.

There is a strong bias in present day practice towards the use of high pressure distribution. This method is to be recommended in certain circumstances, particularly where feeding an area where development is limited. For feeding a growing suburb of a large town a low pressure feeder main is to be recommended. Compression costs when higher pressures have to be adopted grow very quickly and may soon be in excess of the extra capital charges for a larger low pressure main.

As an approximation it can be taken that

$$Q \propto \sqrt{H}$$ where Q = Flow
H = Resistance of main,

i.e., if the flow through a high pressure main is to be doubled the initial pressure has to be quadrupled; if trebled the initial pressure has to be increased nine times.

Gas Consumption

The highest price of gas at Middlesbrough charged through ordinary meters is 2s. 2.1d. net per 1,000 cu.ft., or 5.22d. per therm. This has had a definite effect on consumption. The total estimated domestic consumption for the year ended Mar. 31, 1946, is 1,500 million cu.ft., which averages 43,000 cu.ft. per consumer. The increase in price of coal has made gas in Middlesbrough a very cheap fuel in comparison. The consumption of gas for industrial and commercial uses in Middlesbrough is 36% of the total.

As a matter of interest my own domestic gas consumption shows plainly the advantages of gas in Middlesbrough.

Size of family: Four (two adults, two children—girls aged 9 and 4).

Appliances:

Gas fires—in three bedrooms, lounge, dining room, breakfast room, and a portable fire in a kitchenette.

Gas cooker and wash boiler.

Gas fired circulator—" Lambert " heater.

Gas fired clothes drying cabinet—which is actually a converted coal house.

Period	Gas consumption cu.ft.	Nett gas cost £ s. d.
1945		
May 2 to June 29	22,800	2 0 0
June 29 to Aug. 8	11,900	1 5 3
Aug 8 to Nov. 6	38,000	3 18 2
Nov 6, 1945, to Feb. 8, 1946	76,200	7 15 5
1946		
Feb. 8 to May 9	54,500	5 11 6
May 9 to Aug. 7	34,500	3 11 1
Aug. 7 to Nov. 8	36,400	3 14 10
Nov. 8, 1946 to Feb. 8, 1947	60,700	6 4 0
	186,000	

Total gas account (for 186,000 cu.ft.) year ended Feb. 8, 1947, £19 1s. 5d.; weekly average cost, 7s. 4d. These figures speak for themselves when it is realized that coal costs 3s. 6d. per cwt.

New Works

Carburetted Water Gas. The total capacity of our existing water gas plant in 1945 was 5½ million cu.ft. per day. Apart from an antiquated house of inclined retorts, this was the only standby plant which we possessed against failure of supplies of coke oven gas. With increasing output of gas further carburetted water gas plant was necessary and tenders were invited for a 3 million cu.ft. per day fully automatic plant, complete with waste heat boilers and mechanical grate. This plant is now almost completed and will bring our total standby plant up to 8½ cu.ft. per day of carburetted water gas. The plant has been installed by Humphreys & Glasgow, Ltd., and conforms to their standard design. In conjunction with this plant, which is electrically operated throughout, including the blowing plant, we are installing a transformer house of 500 K.v.A. This was the only means by which we could obtain the necessary electric current, which had to be taken from the town high tension electric supply.

Exhausters. We are about to install a new exhausting plant and this has caused the question of size of units to be considered, and has also had to be considered in relation to the engine house extensions.

The proposals for gasmaking plants comprises five stages. Each stage will be equivalent to approximately 3 million cu.ft. of gas per day, and will comprise one bench of retort settings in each case. Our existing exhausting plant comprises two exhausters each of 3.6 million cu.ft. per day and two of 2 million cu.ft. per day capacity. The smaller ones will be enlarged at a later date. These conditions lend themselves easily to the development of the works as a series of detached units. It is proposed as each retort bench is constructed to couple it up to the exhauster through separate gas mains and condensers. This will be of considerable advantage when the scheme is finally developed, since with five benches in operation each can be let down individually for overhaul and repair without interference with the remainder of the plant. Each bench will also have its own exhauster, although the exhausters will be interchangeable. The new exhausters will therefore be of the same capacity as the existing exhausters—*i.e.*, 3.6 million cu.ft. per day.

New Purifiers. The necessity for new purifying plant has been evident for a long time, but considerable delay has been occasioned by the time taken for the completion of legal procedure involved in the acquisition of the necessary land. Tenders have, however, now been invited and the contract includes for new purifiers having mechanical oxide handling plant, a boundary wall around the site, railway tracks, and a 60-ft. span steel bridge across East Street to carry overhead gas mains and also permit of foot traffic. The whole plant has been specified in the greatest detail, and in view of the rising costs of labour, and the general attitude of workmen towards emptying purifiers, the whole plant has been mechanized to the largest possible extent.

New Carbonizing Plant. The choice of carbonizing plant depended on many factors.

1. In the first place we could only install a unit of small size. This was laid down by the Ministry of Fuel and Power. Secondly, we had no wish to proceed with the full scheme until we knew more about the Government's intention regarding integration of coke oven plants on steel works. We consequently split our scheme into five stages.

The proposed new carbonizing plant is meant to cover the first stage only. This in itself precluded the installation of coke ovens, even if we had not considered them undesirable on account of the limitations in the quality of coke produced. The unit for the first stage is to have a capacity of 3 million cu.ft. per day.

2. Complete gasification was considered and our position as a works having a large gas output but no carbonizing plant would have been ideal for the installation of complete gasification plant, since there would have been no coke market to consider. In fact Middlesbrough is at present a single fuel undertaking. Unfortunately, however, even though there has been much written and spoken about complete gasification, nothing concrete in the way of a plant has yet been put forward. There is one aspect of complete gasification which does not yet appear to have received comment, and that is the incidence of peak loads on the economics of the process.

It is logical to assume that if the policy of smoke abatement and the use of smokeless fuel is followed on the one hand, while on the other hand the Gas Industry adopts complete gasification and discontinuance of the manufacture of coke, gas will be adopted as one of the principal methods of heating domestic premises. This load should be infinitely greater than the present cooking load for example, but in the middle of summer it will be very small compared to an extraordinary high peak in the depth of winter, and this in turn will involve much greater gasholder capacity and revolutionary changes in the size of present distribution systems. Evidently the economics of coke manufacture have much to recommend them, if a national policy of smoke abatement is vigorously pursued.

Our choice lay in one of the present types of carbonizing systems. Horizontals were ruled out as not being in accord with most modern practice, but mainly on account of the greater labour involved in their operation and the dust and heat associated with their use.

Vertical retort systems were considered and chosen, and the final choice was West's continuous vertical retorts with steaming and waste heat boilers. The new plant will include all the most modern improvements which are embraced in the recent designs of West's plant. These include the following: Balanced heating system; expansion plates for retort setting brickwork; mechanical producers; sector discharge; dust extractor.

We gave the question of producers considerable attention before finally specifying a mechanical type. The need for reducing arduous labour in the retort house was our first consideration, and a mechanical producer goes a long way towards achieving this purpose.

A cold gas external producer had disadvantages from an efficiency point of view, although it would give a steady quality of producer gas. A producer which was an integral part of the plant could supply hot producer gas and at the same time be mechanically operated was what we required, and this was finally included in our specification. Technical control can be exercised in a mechanical producer and constant conditions maintained, which will a great improvement on the variations in gas quality normally experienced in ordinary producer practice.

Coke Storage and Screening. Particular attention was given to this matter and the policy of aiming at the maximum overhead storage capacity was adopted. The screening plant will comprise a series of three Pegson vibrating screens with the necessary interconnecting band conveyors. The first screen will scalp out the large coke over 2 in., and the remaining screens will grade the coke into the three sizes, 0-¼ in., ¼ in.-1 in., 1 in.-2 in. These seemingly peculiar grades have been chosen with care, and if not suitable for our purpose can be easily altered. It should first be explained that we are endeavouring to use our smallest sized coke on the producers with the elimination of coke dust below ¼ in. mesh. The producer feed hopper will comprise one chamber of the coke storage hoppers and will be situated adjacent to the gable wall of the retort house. Chutes will feed from this hopper into the retort house on to the producer platform, and it is considered that a producer hopper outside the retort house has many advantages, particularly in the event of a coke fire in the hopper and also as a means of mitigating the dust nuisance. It has been estimated that the coke made below 1 in. mesh after passing through the screening plant will be sufficient to feed the producers. A dedusting screen will be fitted on the chutes from this hopper to extract any fuel below ¼ in. The coke dust below ¼ in. is considered as being useless as a fuel on a normal gas-works, and other means will be adopted for its disposal.

Steam Conservation. This has been given consideration and the following are our proposals at present:

1. All prime movers will be electrically operated with the exception of the exhausting plant and various pumps.
2. It is anticipated that all the steam requirements will be met by waste heat boilers.
3. The existing four Lancashire boilers will be retained for emergency measures.
4. The town electric supply will be used as a standby for our own electric supply.
5. All the surplus steam from the waste heat boilers will be used to drive electric generators.
6. These generators will be operated in conjunction with surface condensers, water coolers, and de-aerating plants, all of which plant will be centrally situated.
7. A steam accumulator will be utilized to absorb surplus steam during off-peak periods.
8. The exhaust steam from the waste heat boiler turbines will be used for preheating the boiler feed water. As an alternative to this, we may, on later installations, install turbines designed to exhaust under pressure and utilize the low pressure exhaust steam for process work on the distillation plants.

Mr. Inwood, of the technical staff of Electrolux, Ltd., gave an address on the principles of refrigeration, design and construction, and important matters in connexion with the fixing and maintenance of Electrolux refrigerators to the Distribution Department staff at the central showrooms of the Leamington Priors Gas Company last week.

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T.I.

New Type of Coke Extractor on Vertical Retorts

FOLLOWING is a report of the discussion on the Paper on "Experiences with a New Type of Coke Extractor on Vertical Retorts," which Mr. W. W. Chisholm, Works Manager of the Slough Gas and Coke Company, presented at a meeting of the Southern Association of Gas Engineers and Managers (Eastern District) on Mar. 25. The Paper was published in the "JOURNAL" of April 16 (p. 141).

The **Chairman** (Mr. J. H. Dyde) said the Slough works had been particularly hard pressed by lack of plant capacity and the acute labour shortage, which had made it difficult to compile information given in the Paper. When Mr. Chisholm and he visited Liverpool they were well received by Mr. Hubbard and were shown round the works by the son of Mr. John Terrace (whom he welcomed to the meeting), who was now in Cape Town. This was the first time that the device described had been applied to a standard set of Glover-West 56 in. retorts, and it had been introduced during the reconstruction of a small unit, so that they would have the benefit of experience when they proceeded to erect a larger unit. It had been intended to make tests on the new discharger using various coals of widely differing characteristics, to see the effects of heavily swelling and other coals and to examine the grading and shatter tests in regard to the quality of the resulting coke, and, indeed, to give a full record of the carbonizing results, but circumstances had been such that they had been only too pleased to carbonize anything that remotely resembled anything of a carboniferous origin.

Mr. **J. H. Shadbolt** (Brighton) said it appeared to him that there was a movement in one direction all the time at the bottom of the retort and he wondered what effect this would have on the brickwork.

Mr. **Chisholm** said there was a movement in both directions; the cutting stroke in one direction and the cut-off plate moving in the opposite direction. After seven months' operation he could not give any information as to the effect referred to.

Mr. **T. C. Battersby** (Watford and St. Albans) said the device seemed to be a development of the cut-off plate as fixed to the West intermittent chamber in that there was a plate to support the charge while the bottom zone was being discharged. From experience it was not to be expected that there would be a lot of wear in the cut-off plate. In ten years' operation of intermittents on the same principle they had not noted any undue wear in the brickwork at the base of the retort. It would be interesting to have some information about the type of tar produced from this plant. The yield from continuous verticals was 17 gall. per ton, and from the intermittents they got roughly 12 gall.; he wondered whether there was any intermediate stage between the two yields.

The question of pressure was rather intriguing and the figures given by Mr. Chisholm did not agree with his own experience in intermittent retorts. The maximum pressure was immediately after the charge and might rise as high as 8-10 in. at the bottom of the retort, gradually subsidising in the first two or three hours to level gauge or even to slight vacuum. He would agree that a slight pressure was an advantage, especially during the discharging operation. With regard to the motor operating the installation, was it to be understood that the stopping of a whole run of retorts occurred at the same time, or was there a staggered operation? Perhaps Mr. Chisholm could also tell them what was the horse power employed. It was remarkable to learn that the moving parts operated for only about 25 hours in a year; there could not be a great deal of wear, even at the end of two or three years.

Mr. **Chisholm** said they could not separate the tar from this particular installation, but judging by experience with the off-take pipes it was very similar to continuous retort tar, and not nearly as viscous as intermittent retort tar. Enormous pressures were experienced in intermittents, chiefly due to the fact that they put in a complete charge, whereas in the present instance they were only putting in about 2 ft. 6 in. at the top. They had one motor for driving the retorts and they all stopped at the same time. The actual horse power was eight, but so far as they could measure the maximum horse power actually employed was less than three, or about ½ h.p. per retort.

Mr. **A. Bird**, London Manager of West's Gas Improvement Co., Ltd., said the problem of extracting coke from vertical retorts had always been of the greatest interest. The more or less standard types of worm extractor had served their purpose well, particularly as they could be adjusted to each retort, and adjustments were certainly necessary owing to the crudeness of the heating systems that had to be used in vertical retorts for a number of years. There was no doubt that the heating of vertical retorts had improved so that there was a steady heat throughout the whole of the retort bench and to each retort; therefore each retort became a standard unit of the same capacity and the same ability to carbonize. When they had got so far it became obvious that they could install an extractor to take a standard volume of coke. This new design had been in their minds for a long time and apparently it was working very successfully. It had enabled them to cope with any class of coal much more easily than with the worm extractor, and that was a big advantage at a time when classes of coal were varying to a much greater extent than in the early days of the vertical retort. The ease of working which this extractor allowed at the top of the retort was a most intriguing feature of the design. If they could get a vertical retort that needed only a small capacity box at the top they would be approaching automatic charging and would be able to do away with a great deal of arduous labour.

The coke receiving chamber at the bottom could be of any size and capable of taking two, four, six, or even eight hour dicharges, but with larger sizes the cost of the installation must necessarily be increased. His Company were grateful to the Slough Gas and Coke Company for agreeing to install the device so that research work in a practical way might proceed.

Mr. **H. W. Moys** (Gas Light and Coke Company) asked whether, in dropping all the charges at once, they were involved in any governor troubles.

Mr. **Chisholm** said there was no sudden big increase in the volume of gas because they were not completely emptying the retorts; they were dealing with only 2 ft. 6 in. at a time. The circumstances were very similar to those in charging a horizontal retort bench.

Mr. **W. A. Evetts** (Watford and St. Albans) asked to what degree the coal was crushed at Slough, and whether the carbonizing of crushed coal for a longer period was a means of improving the coke from the continuous vertical retorts.

Mr. **Chisholm** said the actual amount of crushed coal used at Slough was about 25%. He agreed that it was a matter of importance to improve the quality of the coke. By using crushed coal they obtained a slightly closer grained, harder, and definitely larger, coke, and they also produced a better quality gas.

Mr. **G. L. Braidwood** (Gas Light and Coke Company, Southend) said the advantages indicated by the Author far outweighed any possible disadvantages. Two of the chief advantages seemed to be the elimination of rodding and the production of a denser coke. The ability to deal with any class of coal and the lower maintenance were also of some value. It occurred to him that there was perhaps some disadvantage in regard to scurf formation. It was evidently much more concentrated in the area covered than was the case with the worm extractor, and it was also, apparently, thicker. From a sample which the Author had exhibited there also appeared to be a certain amount of spalling, and he wondered whether in the course of time the extra scurf formation would result in spalling to such an extent as to be damaging to the life of the retort. Mr. Chisholm had made it clear that he was not in a position to give much information regarding the gas yield, but perhaps at some future date he could tell them what effect, if any, the new extractor had on the make, with a rather more definite statement than his present one in which he said it was not less than, and possibly more than, with the worm type; also whether there was any noticeable difference in the calorific value.

He asked whether it was the custom to scurf the retorts clean before putting them back to work. He though that was possibly not the case because it was impossible to put continuous vertical retorts back to work quite clean without causing trouble.

Mr. **Chisholm** said the scurf formation was definitely higher, but it was not so great as it had been in the earlier stages. The sample he had shown was taken from the retort after the extractor had been at work about seven weeks, and it was the only place where there had been any sign of spalling. The analysis of the gas was very similar to that in the other retort house, except that they did not get such a good CO content, but slightly more CO_2. Working conditions for the operators were improved as there was practically no rodding to be done, and they had had no trouble with stopped pipes. With regard to the question of scurfing, they actually scurfed absolutely clean, in the same way as they did when using the worm extractor.

Mr. S. W. **Hammond** (Eastbourne) asked whether the new device had been in use sufficiently long to enable the Author to form any conclusion as to whether there was a longer life of the retorts as compared with the use of the worm extractor, in view of the fact that that the coal was travelling in a series of drops instead of continuously.

Mr. **Chisholm** said their experience had not been long enough to enable them to form any opinion. If they could reduce rodding they would obviously reduce the possibility of damage. If the charge did not touch the walls in the central zones of the retort there was very little wear, and that must tend to increase the life of the setting.

Dr. **A. E. Haffner** (Gas Light and Coke Company), proposing a vote of thanks to the Author, said the experiences at Slough were of great interest, but unfortunately they were confined to types of coal which the Gas Light and Coke Company did not often enjoy. Carbonization of those coals without rodding was not surprising in any system of continuous vertical retorts, but they would like to know a little more about experiences with Durham run-of-mine coal.

Mr. **G. J. Braidwood** seconded and said the members would follow any further developments with great interest.

Publications Received.

From Keith Blackman, Ltd., we have received a leaflet describing a small ventilating unit known as the "KB Extravent," for use in offices, shops, kitchens, &c. Operating on any normal voltage single-phase electric supply, the unit can displace 11,500 cu.ft. of air per hour for a consumption of about 15 watts. Generally used to extract foul air, it can also be supplied to blow in fresh air, only a slight alteration being necessary. With a diameter of only 11¼ in., protruding 4⅛ in. and 3⅞ in. on each side of the wall, and weighing approximately 7½ lb., this neat aluminium fan unit should prove popular.

Published by the British Gas Council, a bright and compact booklet entitled *Let's Look Inside* illustrates the use of gas and coke in eight of the new types of post-war house accepted and put into practice by the House Building Industries' Standing Committee. The sites of these houses are at Eastcote, Brighton, Hayes, Ardingly, Oadby, Walsall, Sale Moor, and Morley, and several photographs of each type of house are included, together with details and advantages of the heating, cooking, laundry, and food storage facilities. Copies are obtainable at 25s. per 100 copies from the British Gas Council.

The third issue of the 1946 *Sulzer Technical Review* has, as its foremost article, an account of the dry coke cooling plants built by Sulzer Brothers for the recovery of heat contained in the incandescent coke of gas-works and coking works. Economic and technical aspects of the plants are dealt with in detail, and tables and diagrams illustrate the advantages of this plant in comparison with wet quenching.

In 1926 the Woodall-Duckham Vertical Retort and Oven Construction Company (1920), Ltd., who were well-known as designers and constructors of coal carbonizing plants for the Gas Industry, negotiated its first contract for a W.-D. Becker coke oven plant. Since then the Company has designed and constructed 1,136 coke ovens and is engaged in the construction of a further 279—a total of 1,415 coke ovens with an annual coal carbonizing capacity of over 10 million tons. Some idea of the size and type of plant constructed may be gained from a new illustrated book entitled *Twenty Years of Coke Oven Construction*, published by the Woodall-Duckham Company. The photographs are of a high quality and give a good idea of the installation, their size and variety.

Gas Stocks and Shares

Business on the Stock Exchange was quiet until after Budget Day, when prices rose in virtually all departments with the exception of British Government securities. Towards the end of the week, however, there was a contraction in turnover. Notwithstanding the new and increased Purchase Tax on domestic appliances there were sharp rises in Associated and General Electric. On Thursday, Gas Light and Coke Ordinary advanced by 1½d. to 21s. 4½d. Rises and falls in gas stocks during the week were as follows:

OFFICIAL LIST

Bournemouth 4 p.c. Deb.	101	—106	— 2
Chester United 5 p.c. ord.	120	—125	+ 3
East Surrey 5 p.c. deb.	120	—125	+ 2
Liverpool ord.	113	—118	+ 1
Newcastle & Gateshead cons.	23/9	— 24/9	— 3d.
Severn Valley 4½ p.c. cum. pref.	20/—	— 22/—	— 1s.
Sheffield cons.	137	—142	+ 2
Do. 4 p.c. deb.	100	—105	— 5
Tottenham & Dist. 5 p.c. pref.	105	—110	— 2
United Kingdom ord.	21/—	— 23/—	+ 6d.

Gas Products Prices

The London Market

Apl. 18.

There are no changes to report in the prices of Coal Tar products.

The Provinces

Apl. 12.

Average prices for gas-works products: Pitch, 75s. per ton; toluole, naked, North, 90's, 2s. 4d. to 2s. 6¾d. per gall.; pure, 3s. 2¾d. Prices for carbolic acid 60's anthracene, creosote oil (hydrogenation), coal tar oils (timber preservation, &c.) and strained anthracene oil are controlled by Government Orders. Prices for road tar are increased by one penny per gall. by S. R. & O. 1947, 177, under which Order there are also increases in the prices of naphthalene.

Scotland

Apl. 19.

Demand for most products is heavy.

*Refined Tar.** Yield to the distiller is 6d. per gall. ex works, naked. *Creosote Oil.* Timber preserving quality* 5½d. to 6½d. per gall.; Hydrogenation Oil* 5¾d. per gall.; Low Gravity or Virgin Oil† 7¾d. to 7½d. per gall.; Benzol Absorbing Oil 6½d. to 8d. per gall. *Refined Cresylic Acid* is 3s. 6d. to 4s. 6d. per gall. ex works, naked, according to quality. *Crude Naphtha*† 7d. to 8d. per gall. *Solvent Naphtha.** Basic maximum prices delivered in bulk 90/160 grade, 2s. 10d. per gall., and 90/190 Heavy Naphtha, unrectified, 2s. 0½d. per gall.; Rectified, 2s. 4d. per gall. *Pyridine.*† 90/160 grade 15s. per gall., and 90/140 grade 17s. per gall.

* Price controlled. † Uncontrolled.

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